Status Report

Period Covered: October 1, 2006 through September 30, 2007

Project: South Florida Surface Water Monitoring Network for Support of MAP Projects
Agency: U.S. Geological Survey (USGS)
USGS Point of Contact: Pamela Telis, patelis@usgs.gov, 904-232-2602
USACE Point of Contact: Elmar Kurzbach, 904-232-2325
Agreement: USGS IA#12 under MOA between USGS and USACE **(**previously USGS WO#24 under MOA between USGS and DA)

I. Major Accomplishments

- The EDENweb (sofia.usgs.gov/eden) site was made publicly accessible in November 2006 and email announcements went to all RECOVER team members, RLG, and others with potential interest.
- The January 2007 version of the ground surface DEM was posted to EDENweb and documented in a report recently posted on EDENweb.
- Paul Conrads hindcasted data for 25 of the new EDEN gages (having no data before early 2006) using artificial neural network prediction models. The results have very high R-square values and made significant improvements in the daily water surface model results.
- In March, provisional EDEN data (specifically, daily water surfaces) were provided to all the GE Wetlands Module PIs and several others (total of about 35) for use in their assessments for 2007 SSR.
- Throughout the second half of the year, the water surfacing program was "tweaked", improved, tested, and enhanced to better serve the users. As with any model, further refinements are always possible.
- Ground elevation was collected at nearly all EDEN gages and posted to the EDENweb for users and plotted on the gage hydrographs. This provides users with a quick assessment of "dry" conditions in the vicinity of their study sites.
- EDENapps was reprogrammed as a series of utilities that will offer easier analysis and manipulation of data by users. Also, EDENapps was reprogrammed to read netCDF daily maps files.
- The EDEN surface water model was modified to create daily map layers in netCDF format. This format replaces the bulky file structure and difficult file management of the ESRI grids. This allows EDEN applications to run on computers without ArcGIS installations.
- UF compiled input datasets for running the TIME model for the period 2002 to 2006 with funding provided by SFWMD directly to UF. These data will be reviewed by USGS and posted on the EDENweb in FY08.
- To provide users with "confidence" in the daily surface water maps, an analysis of field-measured data by John Volin (FIU, now University of CT) and staff was conducted with daily maps from EDEN. Statistical results of this analysis offers

users a measure of the "confidence" of EDEN results and documentation is forthcoming in FY08.

- EDEN staff have met with many PIs and others involved with restoration to seek collaborations, inform them of EDEN data, and gain input for EDEN direction:
    - University researchers – Ross, Volin, Trexler, Gawlik, Fitz, Owen, Brandt, Doran, Nonberg
    - SFWMD staff – S. Newman, Sklar, Obeysekera, McVoy, Rutchey
    - USGS researchers – Rice, Kitchens
    - ENP researcher – Engel

II. Significant Meetings/Workshops

- EDEN/JEM lab workshops were conducted at 3 locations in January-February 2007; SFWMD, USFWS, and ENP. Approximately 60 people attended and we had an opportunity to introduce EDEN to many and talk with many already familiar with EDEN. Future workshops need to be focused to target groups and their needs for data access and manipulation. Most of the comments about the usefulness and relevance of the EDEN were extremely positive.
- The EDEN team met with Ken Rutchey (SFWMD) and the WMD drought monitoring team who are using the EDENweb real-time data to monitoring drought conditions. We discussed the problem of gages "going dry" and knowing if the gage is truly recording water levels below ground surface in the vicinity of the gage. The WMD will prepare a cost estimate for adding shallow wells to several drought "index" gages. These data would be readily available on EDENweb.
- The EDEN model and tools were presented by Leonard Pearlstine at the Second National Conference on Ecosystem Restoration in April 2007 in Kansas City, MO.
- An overview of EDEN was presented as part of the UNESCO IHE Modeling Course on June 6, 2007 in West Palm Beach, FL.

III. Administrative

- In April 2007, the extension for the EDEN project from 4/1/07 to 3/31/10 was approved and funding through 9/30/07 was received.
- The EDEN project continued to fund UF for project support through a CESU agreement in FY07 and plans to fund in FY08. The UF lead is Leonard Pearlstine who resigned his position on 9/7/07 at UF and is now a staff biologist for ENP, Homestead.
- Greater Everglades PES funds continue to support the EDEN project by funding efforts by Paul Conrads (USGS-SC), John Jones (USGS-Reston), Heather Henkel (USGS-FL), and Aaron Higer (UF). Additionally, PES provides some funds for Pamela Telis (USGS-FL) in her role as project coordinator and liaison with the USACE.
- Approximately 3 days of helicopter support from the SFWMD allowed for collection of critical ground elevation data at remote gages at no cost to the EDEN project. Thanks to Patty Goodman.

IV. FY07 Deliverables

- The EDEN website (EDENweb) is operational and providing data for users:
  - Real-time water level data
  - Station information
  - Publications and documentation
  - Ground elevation DEM used for EDEN
- Four USGS series reports document various components of EDEN products
- One Florida Cooperative Extension Service Circular document the EDEN surface water model
- Three journal article submitted describe some aspect of EDEN programs, tools, results, or applications for CERP.
- Ground surface digital elevation model (DEM) of the greater Everglades that uses the high accuracy ground elevation data by USGS
- 400 meter-by-400 meter grid of the greater Everglades
- Water surface model for the greater Everglades that interpolates a continuous water surface with input gage data.
- Hindcast model for use in estimating water level data at 23 EDEN gages

V. FY08 Plans

- A revised version of the EDEN data set (daily water surface maps from 2000 to current) will be rerun and posted to the EDENweb beginning the first week of October.
- Implement a plan for creating daily water surface maps on a quarterly basis with current posting as soon as data are available from the agencies.
- Finalize documentation of the surface water model validation using John Volin's field measured data.
- Work with Leonard Pearlstine at ENP on EDEN-related topics specifically pertinent to ENP landscape issues. There may be opportunity to collaborate to the benefit of all parties.
- Expand EDENweb to include PI websites highlighting CERP applications of EDEN, as related to wading birds, alligators, landscape, and fishes. These websites would be linked off the EDENweb pages but be "maintained" by the PIs. This is a concept that will be developed in the second quarter of the fiscal year.
- Expand EDENweb to include other data parameters for users, such as rainfall, ET, and coastal datasets. Webpages for each parameter will be developed that documents data and offers download options.
- Complete, test, and post all EDENapps utilities. Request ideas from PIs for other enhancements for their SSR assessments.
- Participate in the Tree Island workshop in fall 2007. Present results from several collaborations with PIs conducting tree island research.
- Participate in GEER 2008 in July. Plans are for a 1 ½-day EDEN workshop with presentations from the many PIs using and applying EDEN data in the

assessments. Consider an EDEN booth, presentations, and posters to present EDEN results and applications.
- Initiate discussions with Fred Sklar, SFWMD about EDEN's role and support for the DECOMP project.
- Evaluate marsh water surface slope, ground elevation slope and temporal changes across the Everglades components and ENP in relation to field observation by Chris McVoy.
- Further explore hindcasting models for filling missing data, quality-assuring observed data, or validating the EDEN model.

VI. ANTICIPATED NEEDS OR ISSUES

- None anticipated at this time

VII. FUNDING STATUS

- As of 9/21/07, all FY07 funding has been expended or obligated.